

ATOMIC ENERGY *newsletter*®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH
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Dear Sir:

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Four U. S. research and power reactors will be placed under International Atomic Energy Agency inspection and safeguards when the proposed Agency safeguards system is put into effect, U. S. delegate John A. McCone, chairman of the USAEC, told the Agency's fourth conference during the general debate last week in Vienna. Mr. McCone also asked more support in manpower, materials and money from all members to enable the Agency's present program to go forward, and new projects to be assumed. (Other INTERNATIONAL NEWS, p. 3 this LETTER.)

Deuterium Corp. has first funds at hand for initial operations through completion last fortnight of public offering at \$10 per share of some 30,000 shares of 5% convertible preferred stock. The company, headed by Jerome Spevack, will exploit the heavy-water manufacturing process patents of Mr. Spevack. These patents cover the processing of water to make deuterium oxide, and had been the subject of prolonged litigation during which the inventor sought successfully to prevent public disclosure by the USAEC until he had a sure patent position here and abroad. The Spevack process is said to produce heavy water at far lower cost than previous methods, giving promise of profitable operation, but the capital cost of production plant is such that much additional financing will be required. (Other FINANCIAL NEWS, p. 2 this LETTER.)

New glass with radioactivity said to be less than 6% that of comparable glasses has been developed by Corning Glass Works, Corning, N.Y. Tests have shown radioactivity consistently less than 10 counts per minute per kilogram. This compares with counts of more than 175 for comparable glasses. Corning expects production quantities of the new glass early in 1961. It will be offered to tube manufacturers for such applications as bulbs, heaters and other components of photomultiplier tubes for radiation-measuring equipment. (Other PRODUCT NEWS, p. 4 this LETTER.)

Invitations to undertake for the USAEC a reactor pump seal development and test program have been invited by the Commission's New York Office. A seal to hold leakage of water to less than one gallon per hour would be desirable, the Commission notes. Manufacturers have been asked to present proposals for design, fabrication and testing of such a seal. It is intended they will be for pumps with a capacity of 40,000 gallons per minute; they must operate successfully at temperatures of 600 deg. F. and pressures of 2500 lbs. per sq. in. Conditions call for a dynamic head of 150-ft. and pump speeds of 1800 rpm. (Other CONTRACT NEWS, p. 3 this LETTER.)

Final program has been set for fourth annual symposium on Advances in Tracer Methodology scheduled for Oct. 21, 1960 in Chicago under co-sponsorship of Baird-Atomic, Inc., Cambridge, Mass., and New England Nuclear Corp., Boston, Mass. It will be a one day meeting with Martin Kamen of Brandeis University as chairman. Further details may be obtained from New England Nuclear Corp., 575 Albany St., Boston 18. (Other MEETINGS, COURSES, CONFERENCES, p. 2 this LETTER.)



ATOMIC ENERGY FINANCIAL NEWS...

NET ASSET DECLINE FOR INVESTMENT COMPANY: Net assets of Atlas Corp. were \$5.01 a share on June 30 compared with \$6.25 six months earlier and \$8.06 for the like 1959 period, the company said in its mid-year report. The decrease in asset value of the closed-end investment company was due mainly to declines in market value of its two major stock holdings: Hidden Splendor Mining Co., a uranium producer, and Northeast Airlines, Inc. Atlas owns 92% of the common stock and 22% of the preferred shares of Hidden Splendor. (For the first six months of 1960, Atlas received \$1,430,527 in dividends from Hidden Splendor. Of this amount, Atlas credited \$841,527 as a return of capital and the balance of \$589,000 as income.)

RADIOCHEMICAL MANUFACTURER HAS SALES INCREASE: New England Nuclear Corp., which claims to be the largest U. S. producer and supplier of radiochemicals, had gross sales in fiscal 1960 of about \$600,000. This was an increase over 1959 sales by some \$180,000. Current sales are reported to be running at an annual rate of \$750,000. For 1960, net earnings were \$67,544 compared with \$39,018 in 1959. The company has two subsidiaries, New England Nuclear Assay Corp., and Luminous Products Corp. Luminous products has developed and manufactures tritium luminous paint for watch dials and light sources. A recent amendment by the USAEC of current regulations (10 CFR 30, "Licensing of By-product Material") would exempt from USAEC control the possession, distribution and use of luminous dial watches and clocks containing specified small quantities of tritium as the luminescing agent. If this amendment becomes law (as anticipated) Luminous Products believes it will be in a favorable position to market its tritium paint in competition with the radium paint now used.

ATOMIC ENERGY BUSINESS NEWS...

NUCLEAR POWER PLANT TO BE DEDICATED: Scheduled for Oct. 12 dedication is the \$51 million Dresden nuclear power station of Commonwealth Edison Co., located some 50-miles southwest of Chicago on the Illinois waterway. Built by General Electric Co., Dresden was completed ahead of the originally scheduled date of December, 1960. GE did the job for a contract price of \$45 million. Commonwealth Edison, which will own and operate the plant, is paying \$30 million for site and overhead costs. The \$15 million balance of the contract price is being contributed as a research and development expense by eight companies which organized into a Nuclear Power Group for this job. In addition to Commonwealth Edison, Group members are American Electric Power Service Corp.; Bechtel Corp., Central Illinois Light Co.; Illinois Power Co.; Kansas City Power & Light Co.; Pacific Gas & Electric Co.; and Union Electric Co. (Dresden went into test operation April 15, 1960. It was run at full power June 29 and since then has been operating at various levels up to full power. It is the first full-scale privately-financed nuclear power station in the U. S.; there is no government subsidy.)

NUCLEAR POWERED AIRCRAFT CARRIER CHRISTENED: Last Saturday saw christening of the Navy's nuclear powered aircraft carrier Enterprise. Embodying propulsion system using eight nuclear reactors supplying power to drive four propellers, the craft has large cruising range, at high speeds. Westinghouse Electric Corp. developed and designed the reactors and also supplied from its steam division the steam turbines, reduction gears, condensers and associated machinery making up the propulsion units.

MEETINGS, COURSES, CONFERENCES...

COURSES: Intensive courses in health physics will be held by the USAEC for representatives of state and local governments to assist states assume control of certain radioactive materials which will be permitted under a September, 1959, amendment to the Atomic Energy Act. A 10-week course in health physics will be offered starting Oct. 17, 1960 by the USAEC's New York health and safety laboratory; the course will be repeated in Feb., 1961. Information on this and other courses may be obtained from Office of Health and Safety, USAEC, Wash. 25, D.C.

MEETINGS: Seventh annual meeting of the professional group on nuclear science of the Institute of Radio Engineers is scheduled for Oct. 3-5 at Gatlinburg, Tenn. As now planned some 26 papers in the field of solid state detectors will be presented at the meeting which will be conducted by the Oak Ridge, Tenn., chapter of this group. Further information may be obtained from H. E. Banta, ORNL, P. O. Box X, Oak Ridge, Tenn.

SYMPOSIA: Symposium on Isotopes in Industry will be held Oct. 11, 1960 in Rochester, N.Y., under sponsorship of Western N.Y. Nuclear Research Center. Details are available from the director of the Center, R. F. Lumb, at University of Buffalo.



BIDS ASKED, CONTRACTS LET...on nuclear projects...

BIDS ASKED: Proposals have been asked (deadline Oct. 24, 1960) by the USAEC's Savannah River operations office, Aiken, S.C., for the design, development and possible fabrication of a prototype on-power refueling machine to be used in connection with pressure tube-type, heavy water moderated, natural uranium-fueled nuclear power reactors. The machine would permit the loading and unloading of reactor fuel elements in pressure tubes while the reactor is operating at full power. (The research and development work is a part of the U. S. Canadian cooperative program on heavy water reactors. The successful development of these machines is a key feature of the reactors being built by Atomic Energy of Canada, Ltd., and an important consideration for future heavy water reactors in the U. S.)

CONTRACTS LET: Under contract let by the Japan Atomic Energy Institute, a 12,500 kw nuclear power plant will be constructed by General Electric Japan, Ltd., wholly-owned affiliate of General Electric Co. GE's atomic power equipment department, San Jose, Calif., will design and supply the nuclear part of the plant, including the nuclear fuel. Nippon Atomic Industries Group, which includes Shibaura Manufacturing Co., Hitachi, Ltd., and Matsui Bussan Kaisha, Ltd., will supply certain components and services as sub-contractors to GE. Ebasco Services, Inc., New York, will be architect-engineer for the plant. Site preparation and certain aspects of civil engineering work will be handled by a Japanese construction company.

Contract to handle all nuclear radiation protection services at the Air Force research and development command center, Hanscom Field, Bedford, Mass., has been awarded Controls for Radiation, Inc., Cambridge, Mass. The work calls for the installation, calibration and maintenance of a number of radioactivity monitoring instrumentation systems, and other analytical and consulting services. (The radiochemistry laboratory at Hanscom Field uses reactor-produced isotopes for activation analysis studies in connection with investigations it conducts of certain ultra-pure materials. Laboratory facilities are being expanded to include high energy accelerator equipment.)

The U. K. Atomic Energy Authority has signed construction contract with Fairey Engineering, Ltd., and a control gear design contract with H. M. Hobson, Ltd., in connection with a new zero-energy oscillator reactor which is to be built at the Atomic Energy Establishment, Winfrith. The reactor, which will be called HECTOR, has been designed expressly to facilitate the use of the "Pile Oscillator" technique for evaluating the nuclear behavior of fuels, moderators and structural materials in reactors. (This technique, which uses small samples, has been highly developed by the U.K.A.E.A. to further the reactor physics aspects of power reactor development. HECTOR is expected to go critical during 1962.)

Contract to construct Britain's second nuclear powered submarine has been given Vickers-Armstrongs (Shipbuilders) Ltd., by the Admiralty. Rolls-Royce Ltd. will be sub-contractor for the nuclear plant. (Vickers-Armstrongs handled construction of the Dreadnought, the first British nuclear submarine, whose launching will be this Oct. 21. The Dreadnought uses a Westinghouse S5W type reactor which was brought over from the U. S. and installed by Rolls-Royce. The new ship will also use a pressurized water reactor, but of British design and construction.)

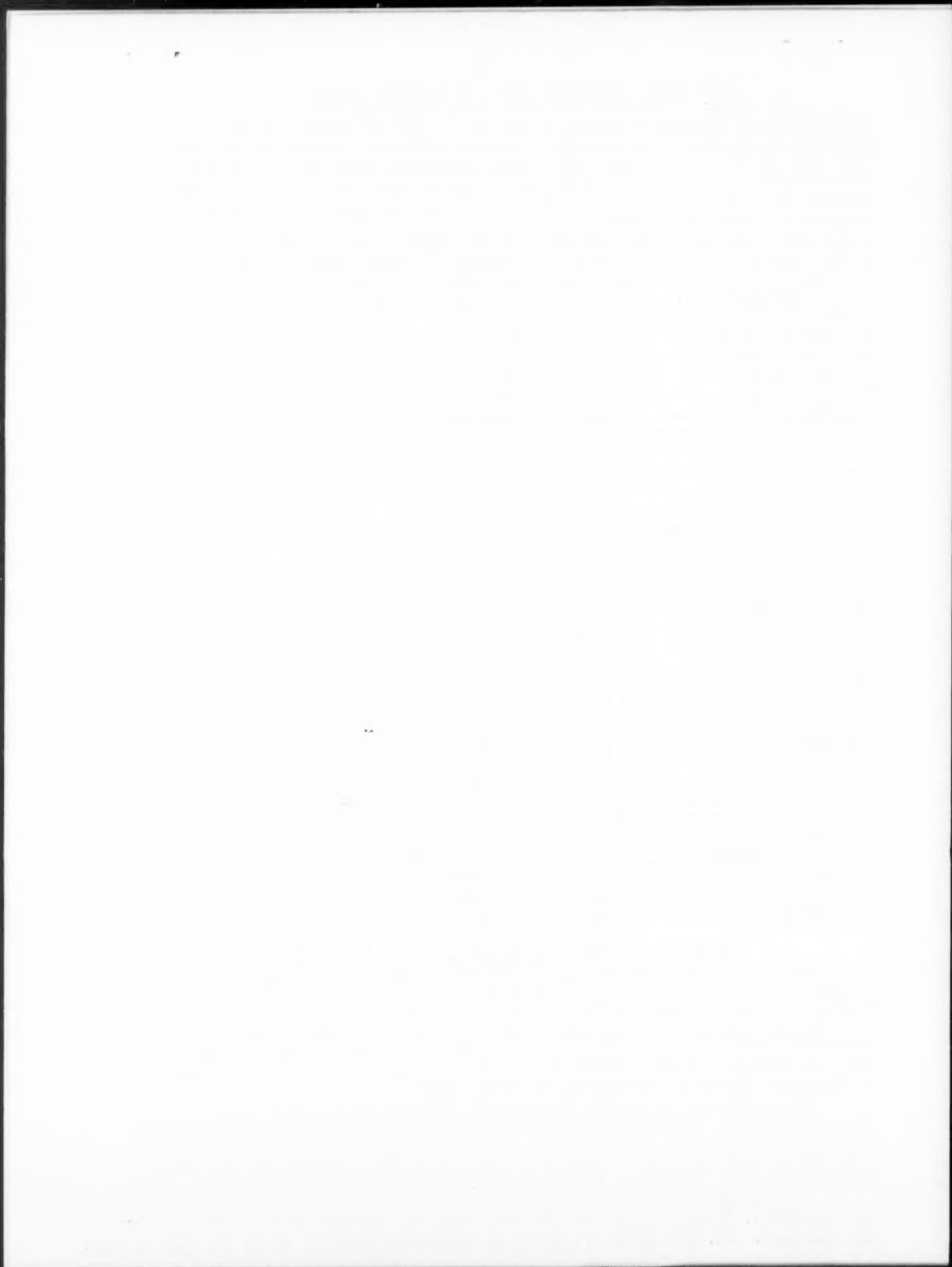
NEW BOOKS & OTHER PUBLICATIONS...

Extractive and Physical Metallurgy of Plutonium and its Alloys. W. D. Wilkinson, editor. Proceedings of symposium of metallurgical society of AIME in February, 1959. 314 pages.--Interscience Publishers, Inc., New York 1. (\$10.50)

Energy from Uranium and Coal Reserves. Summary of world uranium reserves and resources, the recoverable coal reserves and a comparison of the maximum heat energy from the uranium and coal reserves. Prepared by USAEC staff. No. TID-8207.--Office of Technical Services, Washington 25, D.C. (50¢)

Status Report on Aqueous Homogeneous Reactors as of 1959; Book 3, of Part III. Part of the USAEC's 11-volume report on the U. S. civilian power reactor program. No. TID-8518 (3). 184 pages. (\$1.25).....Protection Against Radiations from Sealed Gamma Sources. National Bureau of Standards, Handbook 73. (30¢). Superintendent of Documents, Wash. 25, D.C.

Role of Nuclear Reactors in University Research Programs. Randal M. Robertson. Some eleven U. S. university reactors with descriptions and operating characteristics are included. No. NSF-60-39. -- National Science Foundation, Wash. 25, D.C. (free).



PRODUCTS, PROCESSES, INSTRUMENTS...

PRODUCT NEWS: Prices for cobalt-60 have been reduced by the USAEC. There is now a list price of \$2 per curie for specific activity in curies per gram of 1 to 25; \$3 for 26 to 40; and \$4 for specific activity from 41 to 55 curies per gram, for cobalt-60 it supplies. Discounts start with purchases over 5,000 curies. From 5,001 to 25,000 curies a 25% discount applies; from 25,001 to 100,000 curies there is a 50% discount; and for more than 100,000 curies the material will be sold for \$1 per curie net, regardless of specific activity. Extra charges are made for source selection, handling and shipping. (The Commission's policy is that it will stop supplying cobalt-60 when the material is available from private commercial sources "on reasonable terms". Presumably the prices should be no more than the new USAEC schedules.)

Curium-242 which will be used as a heat source in small auxiliary thermo-electric-effect power generators will be produced by a new heavy metals processing facility being set up by The Martin Co., Baltimore, Md. According to William M. Bowes, Martin chemist, who discussed procedures in a paper before the American Chemical Society's division of industrial and engineering chemistry in New York last fortnight, the curium will be made from americium-241 by neutron bombardment. Prior to its neutron bombardment, the feed americium will be purified to at least 99% by a series of ion exchange steps. First canned curium fuel elements will be produced by March, 1961, he estimated.

New model of the shirt pocket radiation alarm manufactured by Wallace Oy of Finland and distributed by Gelman Instrument Co., Chelsea, Mich., warns of radiation of 3 mr/hr with a crackling sound which increases to a loud buzz at 100 mr/hr. The counter operates at levels up to 3000 r/hr with an energy response range of 30 KEV to 2 MEV. Efficiency is said to be 98%. A small neon light shows condition of the penlight batteries used which normally last about 1 week.

MANUFACTURERS' NEWS: Southwestern Engineering and Equipment Co., Dallas, have been appointed sales representative for High Voltage Engineering Corp., in Texas, Oklahoma, New Mexico, Colorado, Louisiana, Kansas and Arkansas. Southwestern will handle High Voltage's line of Van de Graaff and microwave linear accelerators.

Operating license will be issued next month (following public hearings) by the USAEC for the research and testing reactor at the National Aeronautics and Space Administration's Plum Brook facilities. The Plum Brook test reactor is a 60 megawatt (thermal) heterogeneous, light water cooled and moderated unit. It will be used by NASA for nuclear systems research on nuclear rockets, aircraft propulsion and flight power generating systems. Cost of the reactor now is estimated at \$15,337,000.

Commissioned last fortnight at Newport News Shipbuilding & Dry Dock Co., Va., was the nuclear powered Polaris missile firing submarine USS Robert E. Lee. Nuclear reactor of the craft was developed and designed by Westinghouse Electric Corp. at Bettis Atomic Power Laboratory which the company operates for the USAEC. The Commission's naval reactors branch directed the work. The ship is the third of her class to enter Navy service.

General Electric Co.'s atomic power equipment department, San Jose, Calif., has made shipment of 44 special plate-type nuclear fuel elements for the advanced reactivity measurement facility (ARMF) at the national reactor testing station Arco, Idaho. The advanced critical facility, now nearing completion, will be operated for the USAEC by Phillips Petroleum Co. (The fuel elements on this job had some of the closest tolerances, for mechanical work and uranium content, of any nuclear plate fuel ever manufactured. Precise fabrication was necessary since the ARMF will be used to obtain closer measurements of reactivity than have heretofore been made in a facility of this type.)

MANUFACTURERS' LITERATURE: The decade utility scaler of Tracerlab, Inc., model SC-90, for instruction and laboratory use in schools and colleges is described in new brochure.....Two page brochure (GEA-7150) covers General Electric pool training reactors available in standard designs from 10- to 5,000 thermal kw. It may be obtained from Apparatus Sales division, Schenectady 5, N.Y.....Our Atomic Navy is booklet issued by Westinghouse Electric Corp. describing nuclear propelled aircraft carrier Enterprise, nuclear reactors for which were designed by that company.



ATOMIC ENERGY PATENT DIGEST...

PATENTS ISSUED September 13, 1960 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS:

(1) Method of stabilizing vinyl aromatic polymer foams with ionizing radiation. Louis C. Rubens, inventor. No. 2,952,593 assigned to Dow Chemical Co., Midland, Mich. (2) Latent-foaming vinyl aromatic polymer compositions and method of making. Louis C. Rubens, inventor. No. 2,952,594 assigned to Dow Chemical Co., Midland, Mich. (3) Treatment with ionizing radiation of polyethylene containing particulate filler reacted with vinyltriethoxysilane. Herbert F. Jordan, Wendell V. Smith, inventors. No. 2,952,595 assigned to United States Rubber Co., New York, N.Y. (4) Activation of metals for grignard type syntheses. Paul N. Rylander, Thomas D. Nevitt, inventors. No. 2,952,596 assigned to Standard Oil Co., Chicago, Ill. (5) Process for synthesizing nitriles. Charles S. Cleaver, Blaine C. McKusick, inventors. No. 2,952,597 assigned to E. I. du Pont de Nemours & Co., Wilmington, Dela. (6) Nuclear reactor vapour generating and power plant. William R. Wootton, inventor. No. 2,952,602 assigned to Babcock & Wilcox Ltd., London, England. (7) Radiation fuel gauge. Donald F. Howard, inventor. No. 2,952,774 assigned to North American Aviation, Inc. (8) Method and apparatus for the analytical determination of deuterium. Vincent P. Guinn, inventor. No. 2,952,775 assigned to Shell Oil Co., New York, N.Y. (9) Method and apparatus for indicating radioactivity percentage ratios. Jeno M. Barnothy, inventor. No. 2,952,777 assigned to Nuclear-Chicago Corp.

PATENTS ISSUED September 13, 1960 to GOVERNMENTAL ORGANIZATIONS:

(1) Apparatus and method for injection casting. Arthur B. Shuck, inventor. No. 2,952,056 assigned to USAEC. (2) Refrigeration system especially for very low temperature. Patrick B. Kennedy, Hugh R. Smith, Jr., inventors. No. 2,952,139 assigned to USAEC. (3) Separation of plutonium values from uranium and fission product values. Alfred G. Maddock, Adrian H. Booth, inventors. No. 2,952,511 assigned to USAEC. (4) Sintering metal oxides. William E. Hoake, inventor. No. 2,952,535 assigned to USAEC. (5) Neutronic reactor control element. Henry W. Newson, inventor. No. 2,952,600 assigned to USAEC. (6) Nuclear conversion apparatus. Glen T. Seaborg, inventor. No. 2,952,601 assigned to USAEC. (7) Jacketed fissionable member. Ernest R. Boller, inventor. No. 2,952,603 assigned to USAEC. (8) Cesium recovery from aqueous solutions. Charles A. Goodall, inventor. No. 2,952,640 assigned to USAEC. (9) Strontium precipitation. Theodore R. McKenzie, inventor. No. 2,952,641 assigned to USAEC. (10) Electromagnetic release mechanism. Carlyle Michelson, inventor. No. 2,952,802 assigned to USAEC.

PATENTS ISSUED September 20, 1960 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS:

(1) Method of preparation of uranium dioxide. William M. Leaders, Donald E. Rhodes, Carl W. Kuhlman, Jr., Gerard C. Hemkens, inventors. No. 2,953,430 assigned to Mallinckrodt Chemical Works, St. Louis, Mo. (2) Purification of uranium hexafluoride. Robert V. Townend, Richard F. H. Stahl, inventors. No. 2,953,431 assigned to Allied Chemical Corp. (3) Uranium processing. James L. Hart, Robert E. Reusser, inventors. No. 2,953,432 assigned to Phillips Petroleum Co. (4) Nuclear reactor arrangements. Peter A. Lindley, inventor. No. 2,953,511 assigned to The General Electric Co. Ltd., London, England. (5) System for measuring mass flow rate by radiation. David Frazier, inventor. No. 2,953,681 assigned to The Standard Oil Co., Cleveland, Ohio. (6) Self-luminous light sources. John G. MacHutchin, David L. Prosser, Charles H. Wright, inventors. No. 2,953,684 assigned to U. S. Radium Corp., Morristown, N.J. (7) Well logging. John T. Dewan, inventor. No. 2,953,685 assigned to Schlumberger Well Surveying Corp., Houston, Texas. (8) Detector of penetrative radiation. Allen D. Garrison, inventor. No. 2,953,686 assigned to Texaco Development Corp., New York, N.Y. (9) Instrument for the measurement of radioactive aerosols. Bengt A. Bergstedt, inventor. No. 2,953,687 assigned to Aktiebolaget Atomenergi, Lovholmsvagen, Sweden. (10) Ionization chamber for radiation measurements. Erich Zieler, inventor. No. 2,953,702 assigned to North American Philips Co., Inc., New York, N.Y. (11) Photomultiplier design having high response to x-rays. Joseph Lempert, inventor. No. 2,953,703 assigned to Westinghouse Electric Corp., E. Pittsburgh, Pa. (12) Cathode heating apparatus. Jonathan Townsend, inventor. No. 2,953,717 assigned to Radiation Dynamics, Inc., New York, N.Y.

Sincerely,

The Staff,
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